Note on using CAS for working with book AiryAI/AiryBI terms

CAS such as Mathematica or Maple can actually handle very large numbers. It is possible to calculate individual terms of the Airy series given by the book (but no sum it). Calculating individual terms, up to 10 million terms for x=1,100 and x=10000 is shown below as illustration. It takes few minutes to do each term

define small function to calculate one term

```
bookAi[x_Integer, n_Integer] :=
  3^(-2/3) x^(3 n) / (9^n Factorial[n] Gamma[n + 2/3]) - 3^(-4/3) x^(3 n+1) / (9^n Factorial[n] Gamma[n + 4/3]);
```

This is for x=1, N=10,000,000

In[3]:=
```
bookAi[1, 10 000 000] // N
```

Out[3]= $5.7642115 \times 10^{-140\,856\,542}$

This is for x=100, N=10,000,000

In[4]:=
```
bookAi[100, 10 000 000] // N
```

Out[4]= $5.7583009 \times 10^{-80\,856\,542}$

This is for x=10,000 and N=10,000,000

In[5]:=
```
Timing[bookAi[10 000, 10 000 000] // N]
```

Out[5]= $\{582.3829332, 5.167240 \times 10^{-20\,856\,542}\}$

The above took 582 seconds to complete! The largest number it can handle on my PC is

In[6]:=
```
$MaxNumber
```

Out[6]= $1.605216761933662 \times 10^{1\,355\,718\,576\,299\,609}$

Let compare the above to Gamma[10,000,000]

In[8]:=
```
Gamma[10 000 000.0]
```

Out[8]= $1.2024234 \times 10^{65\,657\,052}$

In[9]:=
```
Gamma[10 000 000.0] < $MaxNumber
```

Out[9]= True

We see that Gamma[10,000,000] is much less than the largest number it can handle. Here is Gamma

for 10 billion

In[10]:=
```
Gamma[10 000 000 000.0]
```

Out[10]= $2.3258 \times 10^{95\,657\,055\,176}$

And 10 billion Factorial

In[11]:=
```
Factorial[10 000 000 000.0]
```

Out[11]= $2.3258 \times 10^{95\,657\,055\,186}$

So CAS can handle these terms. But not the complete series summation as given in the book